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Health Mobilization Series D-7

ORIENTATION MANUAL
on
DISASTER PREPAREDNESS
for
PHARMACISTS

THIS ITEM DOES NOT
CIRCULATE

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service

This manual was prepared by the American Pharmaceutical Association's Committee on Disaster and National Security in cooperation with the Division of Health Mobilization, Public Health Service, Department of Health, Education, and Welfare, under contract with the Office of Civil Defense, Department of the Army.

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Division of Health Mobilization
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Figure 1

EMERGENCY ASSIGNMENT GUIDE

Rating Definition

A: First priority with no additional training required.
B: Second priority with no additional training except a subject review.
C: Requires minimal training (week course).
D: Requires extensive training (month or more course).
F: General lack of suitability.

Assignment	Community pharmacists	Hospital pharmacists	Hospital administration	Industry, scientific	Industry, production	Industry, marketing	Industry, sales	Industry, legal, international, advertising	ndustry, executive	Wholesaling, executive	Wholesaling, other	Government institutional practice	Government regulatory	Government procurement	Government research	Government administration of health programs	Education administrators	Educators	Association executives	Journalists, consultants, etc.
Clinical:																				
Storage and distribution of drugs and health supplies	A	A	A	B	A	C	C	C	C	C	C	A	C	B	C	C	B	B	C	C
Maintenance and operation of central sterile supply	C	A	A	C	C	C	C	C	C	D	D	A	C	C	C	C	C	C	D	D
Emergency screening for medical care	C	C	C	C	C	C	C	C	C	C	C	A*	C	C	C	C	C	C	C	C
Emergency laboratory and X-ray operations	C	C	C	B	C	C	C	C	C	D	D	C	C	C	C	C	C	C	D	D
Disaster hospital administration	C	B	A	C	C	D	D	D	D	D	D	D	B	D	C	C	C	C	C	D
First aid and other lifesaving measures	B	B	B	B	C	C	C	C	C	C	C	B	C	C	C	C	B	B	B	B
Emergency administration of drugs	B	B	B	C	C	C	C	C	C	C	C	B	C	C	C	C	C	C	C	C
Professional and technical assistance as auxiliary medic	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

Preventive medicine:																				
Communicable disease; immunization programs and emergency quarantine	B	B	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Vector control	B	B	B	B	C	C	C	C	C	C	C	C	B	B	B	B	B	B	C	C
Food, milk, water and drug inspection and analysis	C	C	C	C	C	C	C	C	C	D	D	C	C	C	C	C	C	C†	D	D
Control and disposal of sewage and garbage	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Detection of radioactivity and decontamination procedures	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Medical Self-Help training	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Health materiel:																				
National drug and health supply planning	F	F	A	F	F	F	F	F	A	A	F	F	F	F	F	A	F	F	A	A
Regional and local inventory control and supervision of storage methods	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B
Supervision of system for providing pyrogen-free water and direction of emergency manufacturing	B	A	A	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Supervision of inspection of supplies, and assistance in developing emergency kits	C	C	C	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Establishment of system of cost-accounting, coordination with health departments, CD authorities, and management of distribution programs	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B
Related activities:																				
Coordinating pharmacy manpower requirements, and assistance in supportive services	F‡	F	A	F	F	F	A	F	A	A	F	B	B	B	B	A	A	B	A	A
Source of direction as well as medical supplies for shelters	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Supervision of Packaged Disaster Hospitals	A	A	A	F	F	F	F	F	B	F	F	F	F	F	F	F	B	B	F	F

*Military Corpsmen only; all others C.
†Except Pharmaceutical Chemists which rate A.
‡Except for certain administrative positions in large chains.

INTRODUCTION

Over the years, increased importance has been attached to national security and disaster preparedness. Natural, accidental, and even nuclear disasters could strike without warning at any time and an unsuspecting and unprepared public can suffer devastating damage from any of these causes.

Hurricanes and floods disrupt the lives of many people every year and the possibility of accidents of a magnitude to affect entire communities is always present. An alert public recognizes the need to prepare predisaster in order to cope with and survive an emergency. Through governmental and nongovernmental groups on the local, State, and national levels, disaster preparedness is becoming a significant part of our way of life.

The final responsibility for coping with disaster conditions rests with the individual citizen. If he is familiar with local disaster preparedness plans and has anticipated how his own particular needs can be met within the framework of these plans, he is better equipped to act should disaster strike.

While all members of the community should be prepared to work together, the health professions, because of their particularly important role, should be even more prepared to respond to emergency conditions. The health team will have in its care a most important asset—lives. It is for this reason that pharmacists, as members of a necessary health team, must recognize their role in disaster preparedness.

The pharmacist, because of his relationship with both the public and medical practitioners, can make a definite contribution by offering his services in pre- and postdisaster situations. He can perform some functions immediately without any additional training, while other functions will require orientation.

The American Pharmaceutical Association Committee on Disaster and National Security prepared this manual by enlarging and expanding the concepts of its earlier study, *The Role of the Pharmacists in National Disasters* (PHSP No. 1071–I–4). The Committee prepared both publications in cooperation with the Division of Health Mobilization, Public Health Service, U.S. Department of Health, Education, and Welfare, under contract with the Office of Civil Defense, Department of Defense. This manual seeks to identify and explain in some detail the services the pharmacists can perform in a disaster situation.

The most effective disaster preparedness programs can be achieved through good organization, yet little attempt has been made to coordinate the activities of pharmacists in disaster preparedness. Before pharmacists can participate as a group, they must be aware of existing Federal disaster programs and their responsibilities to these programs as well as what additional services they can perform.

Depending on the type of disaster and its location, conditions for disaster preparedness will vary. Nonetheless, a basic approach to disaster preparedness can be established. It is the purpose of this manual to present guidelines for the pharmacist so that he can participate in existing programs and in the development of new programs for disaster preparedness.

Because of the fact that pharmacists differ in knowledge and experience acquired through training and education, some will be more proficient in certain areas than in others. The Emergency Assignment Guide, page 1, provides a guide to emergency services which pharmacists, according to their specialty, can best perform.

FEDERAL DISASTER PROGRAMS

The Department of Defense and the Department of Health, Education, and Welfare have overall responsibility for several programs which are devoted directly or indirectly to providing emergency medical services in times of disaster. The Office of Civil Defense of the Department of Defense is responsible for the selection and stocking of fallout shelter areas while the Division of Health Mobilization of the Public Health Service has the primary concern of providing emergency health care. Two important programs of the Division of Health Mobilization are the Packaged Disaster Hospital* and the Medical Self-Help Training programs.

A. SHELTERS

While details of a civil defense program may change with the evolution of weapons, the essential elements of the program are to provide adequate emergency shelter protection for the public along with necessary material to sustain life during an emergency period or in the event of nuclear war.

Since transfer of certain elements of civil defense activities by executive order to the Department of Defense on August 1, 1961, a program has been developed based on two primary objectives:

1. A system of equipped, stocked shelters with the minimum purpose of protecting our entire population from the fallout effects of a nuclear attack.
2. National, State, and local organization, planning and training to carry out warning, emergency communications, movement to shelter, health and feeding services, firefighting, decontamination, rescue and reconstruction of vital facilities and services.

Each shelter is stocked with sanitation kits and a minimum quantity of food and water. Radiological monitoring kits permit trained monitors to determine the radiological situation within the shelter and to survey the area near the shelter.

Medical Kits

Medical kits are included in the shelter provisions. Since professional medical assistance may be limited in any particular shelter, instructions for use of kits are included. These kits contain basic medical supplies for the maintenance of individual health. Three prescription drugs for oral use are contained in the kits: Penicillin G, phenobarbitol, and sulfadiazine tablets.

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*Formerly called the Civil Defense Emergency Hospital.

Two kits are presently available: Kit A, stocked for 50–65 persons, and Kit C, stocked for 300–325 persons (see figure 2). The community may wish to provide additional supplies for the shelter.

Suggested Reading

1. *Personal and Family Survival.* Department of Defense Manual SM 3–11, May 1963.
2. *Austere Medical Care for Disaster.* PHSP No. 1071–D–1. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964.

B. PACKAGED DISASTER HOSPITAL

The Public Health Service Packaged Disaster Hospital (PDH), is a packaged unit which contains supplies and equipment necessary to set up a 200-bed emergency hospital in a school, or other suitable building, with sufficient additional expendable supplies to keep it in operation for about 30 days. Hospital sections provided for are admitting and sorting, operating rooms, wards, X-ray, laboratory, pharmacy, and central supply.

Over 2,000 PDH units have been placed in strategic locations across the country in order to ensure adequate medical and hospital facilities in case of a major disaster. Plans and policies have been developed to assure that each PDH is stored under proper conditions and released as needs indicate. Provisions for food, maintenance, utilities, and other services are the responsibility of the community when the hospital is activated.

The chief of staff of the PDH should be a physician, preferably one with hospital administrative experience. The hospital administrator should be qualified in administrative and executive functions. These two must oversee the establishment of the PDH and, later, direct its operation. The chief of staff is primarily responsible for setting up medical sections and the hospital administrator for setting up all nonmedical sections.

The pharmacy itself is organized so that the pharmaceutical supplies furnished contain at least one medication in each essential therapeutic category: Anesthetics, analgesics, sedatives, anti-infecants, antiseptics, stimulants, antispasmodics, antihistamines, ophthalmic medications, and intravenous solutions including dextran and serum albumin. Although most of the drugs are supplied ready for use, some techniques must be applied in the pharmacy before certain drugs can be used.

The pharmacy will require an area of about 500 square feet and should be staffed by a minimum of two pharmacists for a 24-hour operation. A complete listing of pharmaceuticals and related supplies for which the pharmacists will be responsible is shown in figure 3.

Suggested Reading

1. *Establishing the Packaged Disaster Hospital.* PHSP No. 1071–F–1. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964, Revised.
2. *Series 62000 Packaged Disaster Hospital, Component Listing and Storage Data.* Health Mobilization Series F–11. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, May 1965.
3. *Therapeutic Guide for Pharmaceuticals in the Packaged Disaster Hospital.* PHSP No. 1071–C–1. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1965.

C. MEDICAL SELF-HELP

The Medical Self-Help Training program is designed to help people meet their own health needs if disaster strikes and there is no doctor. It was developed by the Public Health Service with the cooperation of the Office of Civil Defense. Its goal is to train at least one member of each family in the United States.

The course consists of 16 hours of instruction divided into 11 separate lessons on the following subjects: Radioactive fallout and shelter, healthful living in emergencies, artificial respiration, bleeding and bandaging, fractures and splinting, transportation of the injured, burns, shock, nursing care of the sick and injured, infant and child care, and emergency childbirth.

Information about taking the course can be obtained by contacting your State Health Department or State Civil Defense office. A survey conducted recently by the American Phamaceutical Association Committee on Disaster and National Security revealed that many pharmacists have taken this course and are now instructing others in Medical Self-Help.

An instructor's kit is available through the State Health Departments or State Civil Defense offices. The kit, a carrying case of heavy cardboard, contains the following materials:

1. Instructor's guide
2. Course introduction
3. Eleven lesson books
4. Reference manual, *Family Guide, Emergency Health Care*

5. Eleven 35 mm color films strips
6. Projector and screen
7. Examination booklets and grading templates

The pharmacist, in his daily contact with the public, can provide information about Medical Self-Help Training and encourage his patrons to enroll in a course. A store-counter poster on Medical Self-Help is available from the State Health Departments upon request.

Suggested Reading

Medical Self-Help Training . . . For You and Your Community. PHSP No. 1042. U.S. Department of Health, Education, and Welfare, Public Health Service, and U.S. Department of Defense, Office of Civil Defense. Revised June 1965.

Figure 2

CONTENTS OF SHELTER MEDICAL KITS

Nomenclature	*Unit Issue*	*Quantity*	
		Kit A[1]	*Kit C*[2]
Acetylsalicylic Acid Tablet (Aspirin) 500's	Bottle	1	--
Acetylsalicylic Acid Tablet (Aspirin) 1,000's	Bottle	--	3
Cascara Sagrada Tablets 100's	Bottle	1	6
Eugenol 1 oz.	Bottle	1	1
Eye and Nose Drops ½ oz.	Bottle	3	18
Isopropyl Alcohol 1 quart	Can	1	6
Kaolin and Pectin Powder 40 grams	Bottle	3	16
Penicillin G, Tablets 250,000 Units 100's	Bottle	2	12
Petrolatum, White 1 pound	Can	1	3
Phenobarbital Tablets ½ grain 500's	Bottle	1	--
Phenobarbital Tablets ½ grain 1,000's	Bottle	--	3
Soap, Surgical w/2% Hex, 1¾ oz	Cake	6	36
Sodium Bicarbonate 1 pound	Can	1	2
Sodium Chloride 1 pound	Can	1	2
Sulfadiazine Tablets 7½ grain 500's	Bottle	1	--
Sulfadiazine Tablets 7½ grain 1,000's	Bottle	--	3
Water Purification Tablets, Iodine 50's	Bottle	2	12
Bandage, Gauze, Roller 2″ x 6 yd 12's	Pkg.	1	6
Bandage, Muslin, 37″ x 37″ x 52″	Each	1	6
Cotton, Purified 1 pound	Pkg.	1	3
Pads, Gauze, Surgical 4″ x 4″ 200's	Pkg.	1	6
Applicator, Wood, Cotton Tip End 100's	Pkg.	1	6
Depressor, Tongue, Wood 100's	Box	1	3
Forceps	Each	1	1
Pin, Safety, 1½″ 12's	Pkg.	3	12
Scissors, Pocket, Straight 4″	Each	1	3
Syringe, Fountain	Each	1	1
Thermometer	Each	1	4
Manual—Medical Care in Shelters	Each	1	1

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[1] Kit A is stocked for 50–65 persons.
[2] Kit C is stocked for 300–325 persons.

When additional funds become available the contents of Medical Kits may be changed. However, directions for use of medical items will be available with each kit.

Figure 3

PHARMACEUTICALS AND RELATED SUPPLIES IN THE SERIES 62000 PACKAGED DISASTER HOSPITAL

Acetylsalicylic Acid Tablets, USP, 0.324 Gm (5 gr), 1000s.

Albumin, Normal Human Serum, USP, 100 ml bottle, with injection set.

Alcohol, Denatured, Specially Denatured Alcohol No. 23H, 1 qt.

Aluminum Hydroxide Gel, Dried, Tablets, USP, 0.324 Gm (5 gr), 100s.

Atropine Sulfate Ophthalmic Ointment, 1%, ⅛ oz tube, 12s.

Atropine Sulfate Tablets, USP, 0.4 mg (1/150 gr), Hypodermic, 20s.

Bacitracin Ointment, USP, 500 units per Gm, ½ oz tube, 12s.

Barium Sulfate, USP, 10 lb.

Benzalkonium Chloride Solution, USP, 10%, 4 fl oz.

Bismuth Subcarbonate Tablets, NF, 0.324 Gm (5 gr), 500s.

Blood Collecting-Dispensing Bag and Donor Set, with Anticoagulant, 450 ml, 4s.

Blood Recipient Set, Indirect Transfusion, Disposable Type, Field.

Boric Acid Ophthalmic Ointment, 5%, ⅛ oz tube, 12s.

Calcium Chloride Injection, USP, 10%, 10 ml ampul, 12s.

Cascara Sagrada Extract Tablets, NF, 0.25 Gm (4 gr), 100s.

Chloramphenicol Capsules, USP, 0.25 Gm (4 gr), 100s.

Chloroform, USP (for Anesthesia), 4 oz.

Chlorpromazine HCl Injection, 25 mg (⅜ gr) per ml, 2 ml ampul, 6s.

Chlorpromazine HCl Tablets, USP, 25 mg (⅜ gr), 500s.

Dextran Injection, 6%, 500 ml, with injection set.

Dextrose and Sodium Chloride Injection, USP, 1000 ml bottle, 6s.

Dextrose Injection, USP, 5%, 1000 ml bottle, 6s.

Dextrose Injection, USP, 10%, 3 ml ampul, 10s.

Dextrose Injection, USP, 50%, 50 ml ampul, 6s.

Digitoxin Tablets, USP, 0.1 mg (1/600 gr), 100s.

Digoxin Injection, USP, 0.25 mg (1/250 gr) per ml, 2 ml ampul, 12s.

Diphenylhydantoin Sodium Capsules, USP, 100 mg (1½ gr), 100s.

Edrophonium Chloride Injection, USP, 10 mg (⅙ gr) per ml, 10 ml.

Enteral Feeding Formula, 5 lb (nasogastric or oral), with feeding tube.

Ephedrine Sulfate Capsules, USP, 25 mg (⅜ gr), 500s.

Ephedrine Sulfate Injection, USP, 25 mg (⅜ gr), 1 ml ampul, 12s.

Epinephrine Injection, USP, 1:1000, 1 ml ampul, 25s.

Ergonovine Maleate Tablets, USP, 0.2 mg (1/300 gr), 100s.

Ether, USP (for Anesthesia), ¼ lb.

Eugenol, USP, 1 oz.

Hydrocortisone Sodium Succinate, Sterile, 133.7 mg, with diluent, 100 mg Hydrocortisone equivalent.

Hydrocortisone Tablets, USP, 20 mg (⅓ gr), Scored, 100s.

Hydroxyzine HCl Injection, 25 mg (⅜ gr) per ml, 10 ml.

Insulin Injection, USP, 80 units per ml, 10 ml.
Insulin, Isophane, Suspension, USP, 80 units per ml, 10 ml.
Insulin, Protamine Zinc, Suspension, USP, 40 units per ml, 10 ml.
Intravenous Injection Set, Disposable Type, Field.
Isopropyl Alcohol, NF, 1 qt.
Levarterenol Bitartrate Injection, USP, 0.2%, 4 ml ampul, 10s.
Lidocaine HCl and Epinephrine Injection, 1.8 ml cartridge, 50s.
Lidocaine HCl Injection, USP, 1%, 5 ml.
Lidocaine HCl Injection, USP, 2%, 20 ml.
Lidocaine Ointment, 5%, 35 Gm, 12s.
Lubricant, Surgical, Jelly, 4 oz.
Mercaptomerin Sodium, Sterile, USP, Powder, for injection, with diluent, 1.4 Gm (21 gr), 10 ml.
Metaraminol Bitartrate Injection, NF, Equivalent to 10 mg (⅙ gr) of Metaraminol Base per ml, 1 ml ampul, 12s.
Methimazole Tablets, USP, 5 mg (1/12 gr) 500s.
Methoxamine HCl Injection, USP, 20 mg (⅓ gr) per ml, 1 ml ampul, 12s.
Nalorphine HCl Injection, USP, 5 mg (1/12 gr) per ml, 2 ml ampul, 6s.
Neostigmine Methylsulfate Injection, USP, 1:2000, 1 ml ampul, 12s.
Nikethamide Injection, NF, 25%, 1½ ml ampul, 5s.
Nitrous Oxide, USP, Filled Type M Cylinder, 2000 gal.
Oxygen, USP, Filled Type M Cylinder, 750 gal.
Oxytetracycline-Polymyxin B Ear Drops, Powder, with diluent, 5 ml.
Oxytetracycline-Polymyxin B Ophthalmic Ointment, ⅛ oz tube, 10s.
Oxytetracycline Tablets, 0.25 Gm (4 gr), film coated, 100s.
Penicillin G for Injection, USP, Buffered, 1,000,000 units.
Penicillin G. Procaine, USP, Powder, for aqueous injection, 3,000,000 units.
Penicillin G Tablets, USP, Buffered, 250,000 units, 100s.
Pentobarbital Sodium Tablets, NF, 100 mg (1½ gr), 500s.
Petrolatum, Liquid, USP, 1 qt.
Petrolatum, White, USP, 1 lb.
Phenobarbital Tablets, USP, 32 mg (½ gr), 100s.
Physostigmine Sulfate Ophthalmic Ointment, ¼%, ⅛ oz tube, 12s.
Pituitary, Posterior, Injection, USP, 10 units per ml, 1 ml ampul, 6s.
Potassium Chloride Injection, USP, 20 mEq, 10 ml ampul, 25s.
Procainamide HCl Injection, USP, 100 mg (1½ gr) per ml, 10 ml.
Promethazine HCl Injection, USP, 25 mg (⅜ gr) per ml, 1 ml ampul, 25s.
Quinidine Sulfate Tablets, USP, 0.2 Gm (3 gr), 100s.
Ringer's Injection, Lactated, USP, 1,000 ml bottle, 6s.
Scopolamine HBr Tablets, NF, 0.6 mg (1/100 gr), Hypodermic, 20s
Soap, Surgical, with 2% Hexachlorophene, 4 oz.
Soda Lime, USP, 4–8 mesh (for use with anesthesia machine), 5 lb.
Sodium Bicarbonate Tablets, USP, 0.6 Gm (10 gr), 1,000s.
Sodium Chloride Injection, USP (Normal Saline Solution), 5 ml ampul, 25s.
Sodium Chloride Injection, USP (Normal Saline Solution), 1,000 ml bottle, 6s.

Sodium Chloride-Sodium Bicarbonate Mixture, 4.5 Gm packets, (Sodium Chloride, USP, 3 Gm; Sodium Bicarbonate, USP, 1.5 Gm), 2s.

Sodium Chloride Tablets, USP (for Normal Saline Solution), 2.25 Gm (34.7 gr), 100s.

Sponge, Absorbable Gelatin, USP, Sterile, 80 x 125 x 10 mm.

Streptomycin Sulfate, USP, Equivalent to 1 Gm of Streptomycin Base, for injection.

Succinylcholine Chloride Injection, USP, 20 mg (1/3 gr) per ml, 10 ml bottle, 6s.

Succinylsulfathiazole Tablets, NF, 0.5 Gm (7½ gr), 1,000s.

Sulfadiazine Tablets, USP, 0.5 Gm (7½ gr), 1,000s.

Tetanus Antitoxin, USP, Therapeutic Dose, 20,000 units.

Tetracaine HCl for Injection, USP, 20 mg (1/3 gr) ampul, spinal, dry powder (Niphanoid Type), 10s.

Tetracaine HCl Tablets, 100 mg (1½ gr), for preparing topical anesthesia solution, 100s.

Tetracaine Ophthalmic Ointment, 0.5%, 1/8 oz tube, 12s.

Tetracycline HCl for Injection, USP, Powder, 500 mg (7½ gr).

Thiopental Sodium for Injection, USP, 5 Gm (75 gr) ampul, 25s.

Tolbutamide Tablets, USP, Scored, 0.5 Gm (7½ gr), 50s.

Tripelennamine HCl Tablets, USP, 50 mg (¾ gr), 1,000s.

Tubocurarine Chloride Injection, USP, 3 mg (1/20 gr) per ml, 10 ml, 6s.

Water for Injection, Sterile, USP, 5 ml ampul, 25s.

Zinc Oxide, USP, 1 lb.

Zinc Oxide Ointment, USP, 1 lb.

PHARMACIST'S AREA OF RESPONSIBILITY

The pharmacist can perform an active and important service by offering his assistance and participating in existing disaster preparedness programs. There are certain functions which the pharmacist can perform immediately during a disaster. With a minimum of training and effort, the pharmacist also can perform services in other areas such as laboratory, X-ray, and emergency medical services, to mention a few. Some of the functions that he could be expected to perform are considered briefly in this chapter.

A. PHARMACEUTICAL AND ADMINISTRATIVE SERVICES

1. Procurement, Storage and Distribution of Drugs and Health Supplies

Even though some medications and health supplies will be available to the public through shelter medical kits and the PDH, there is a need for a current list of available comprehensive therapeutic agents and other equivalents. The pharmacist is familiar with the special controls required in the handling of narcotics and could be expected to work with the proper authorities in providing for emergency needs. With appropriate consultation, the pharmacist can assist in the choice of drugs and health supplies when resources are limited in an emergency. An adequate supply list, however, is valueless unless supplies can be located and put into use. Available sources of supply must, therefore, be determined from the local to the national level with appropriate reporting systems. Community pharmacies, hospitals, wholesalers, and pharmaceutical manufacturers should be identified so that they can be alerted for possible assistance in the event of an emergency. In each area, the location of supplies for emergency use should be identified and listed, if possible, in advance of a disaster. If additional supplies are needed, they will have to be collected at some central location for distribution.

Pharmacists should consider all possible means of transportation in such a collection process. After the supplies have been collected, an accounting system should be placed into operation so that replacement of material can be made when conditions return to normal.

Medical supplies procured for eventual distribution in the event of an emergency must be stored under proper conditions. It would be advisable for pharmacists to familiarize themselves with methods of storing shelter medical kits and drugs in the PDH by contacting their State Health Departments and inquiring about the nearest location of these Federal supplies. A visit to these storage areas will provide a better working knowledge of how the pharmacist can participate in pre- and postdisaster planning.

Medical supplies, once gathered and stored, will be of little value unless there is a plan for a system of controlled distribution. Adequate methods of transferring these supplies from their point of storage to their destination are as vital to a successful program as procurement itself. The pharmacist, within the framework of established policy, can be of great assistance in this area.

The pharmacists of the Summit County (Ohio) Pharmaceutical Association have developed a disaster program which provides supplemental medical supplies. Known as the Summit Plan, the program provides for a portable, tool-type kit containing a variety of medications covering broad pharmacological categories. The kit is kept in the pharmacy where the drugs are part of the normal inventory of the pharmacy. When needed, it can be easily carried to the point of disaster by the pharmacist or someone with similar authority. In addition, the Summit County Association has developed a Medikit which consists of additional health and medical supplies stored in a foot locker at sheriffs' posts throughout the county. Upon emergency, the kit is easily transported by the police to the scene of the disaster.

Suggested Reading

1. *The Pharmacist in Retail Distribution.* Third Edition. A. Hamilton-Chute, Esther J. W. Hall; Hemphill Publishing Co., Austin, Tex., 1960; pp. 173–187 and 301–323.
2. *Remington's Practice of Pharmacy.* Twelfth Edition. Eric W. Martin and E. Fullerton Cook, Editors; Mack Publishing Co., Easton, Pa., 1961; pp. 1727–1764.
3. *Storage Structures Erected for Pre-positioned Civil Defense Emergency Hospitals.* PHSP No. 1071–F–7. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization. Reprinted March 1964.

2. Emergency Compounding and Manufacturing

Since certain drugs may not be readily available in an emergency situation, a system of improvisation would be required. The pharmacist has the capability to plan and direct such emergency manufacturing and compounding of medications from available sources. This may include processing raw materials, use of substitute raw materials, conversion of other manufacturing plants and equipment into pharmaceutical manufacturing facilities, as well as functions performed daily by the pharmacist in compounding medications to conform to the physician's requests. He could also be expected to direct and assist in procurement of available supplies by setting up an emergency bottling and packaging operation. This might include the preparation of sterile solutions for injection. Also, the pharmacists would be aware of additional sources of medicinals as they became available.

Suggested Reading

1. *The Art of Compounding.* Jenkins, Francke, Bracht, Sperandio; McGraw-Hill Book Co., Inc., New York, London, Toronto, 1957.
2. *Husa's Pharmaceutical Dispensing.* Eric W. Martin, Editor; Mack Publishing Co., Easton, Pa., 1959.
3. *Remington's Practice of Pharmacy.* Twelfth Edition. Eric W. Martin and E. Fullerton Cook, Editors; Mack Publishing Co., Easton, Pa., 1961; Part III, pp. 331–529.

3. Product Identification and Quality Control

Drugs set aside for emergency use can be expected to lose their potency when they are stored over a long period. They should, consequently, be inspected regularly, predisaster, so that they can be replaced before they become unusable. If such a program of quality control is established, as it has been in the case of PDH units, the only inspection necessary at the time of disaster will be to detect damage which may have resulted from the disaster itself. Pharmacists could be expected to perform such screening before medications are released for use.

4. Existing Programs

As previously explained, the shelter program has been developed by the Department of Defense to provide fallout protection to the public in the event of a nuclear disaster. If a physician is not available to render necessary medical care to shelter occupants, then the responsibility will fall upon the most qualified of those present. With proper advance preparation, the pharmacist will be among those well qualified to provide these services.

The pharmacist can assist the local civil defense agency in planning to provide emergency health care. By becoming active in local civil defense activities, he may assume a leadership role in the development and maintenance of an organized, operational local shelter program. If he has had Medical Self-Help training, he will be better prepared to offer medical aid in the absence of a physician or other medical personnel, or to aid available medical people. The pharmacist may shoulder his civic responsibility by offering his services to the local civil defense agency and by becoming involved in its programs.

The Packaged Disaster Hospital program has now pre-positioned units in more than 2,000 communities across the country. Predisaster, each community must designate a custodian and furnish proper storage facilities to assure the continuing safety and usability of the PDH. The community also prepares a PDH utilization plan which includes provisions for staffing the hospital in a disaster situation. The plan calls for a minimum of two pharmacists for 24-hour operation. Thus, there are several ways in which the pharmacist can offer his services in the PDH program—as a PDH custodian; as an advisor to the community authorities, particularly in regard to the proper storage of the 30-day supply of pharmaceuticals; and as a member of the standby staff.

5. Supporting Services

One of the greatest problems to be faced after a disaster is that of manpower availability. Support for disaster preparedness programs and the availability of manpower postdisaster are dependent upon an informed and organized public. The pharmacist can perform a dual service in this respect by being a source of reliable information for both the public and his colleagues in the health professions. As a consultant to physicians as well as other health professionals, he can provide information about local and State health agency disaster programs. To do this, the pharmacist must make himself known to, and offer to work with, these agencies in order to learn about their programs and gain a better appreciation of their problems.

Because the pharmacist is a source of family health information, he can stimulate in the general public the recognition of the need to be prepared to cope with a disaster situation in an organized manner. He is in an excellent position to inform the public about first aid training and Medical Self-Help.

Not only can the pharmacist assist in informing the health professions and the public, but he can coordinate manpower recruitment and utilization efforts as well. Here the pharmacist can serve as a channel of communications in coordinating emergency health manpower demand and supply among the public, the health professions, and others.

Suggested Reading

1. *Community Emergency Health Manpower Planning.* PHSP No. 1071–I–1. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964.
2. *Community Emergency Health Preparedness.* PHSP No. 1071–A–2. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964.

B. EMERGENCY MEDICAL SERVICES

It must be expected that, following a disaster, the numbers of casualties may overtax the available medical personnel. In such a situation, the best qualified people present will probably have to be trained on the spot to assist with the care of the sick and injured. The pharmacist, with a minimum of additional training, can serve in a number of capacities. The more training and guidance he has received prior to the disaster, the greater an asset he will be to other medical personnel in performing such services as emergency administration of drugs, assistance in sorting casualties, and detection and control of communicable diseases. A knowledge of Medical Self-Help will be valuable.

1. Early Care

During the initial impact of a disaster, an individual is thrown upon his own resources to provide for his own safety and that of his family and neighbors. In the absence of organized medical care, he will have to rely on the first-aid training he has received predisaster. If he has also had Medical Self-Help Training, he will be better prepared to meet his immediate needs and turn as quickly as possible to the needs of his community.

2. Emergency Administration of Drugs

With proper advance training, the pharmacist can, in times of emergency, be in a position to administer lifesaving drugs to those in need. As the medication expert of the health professions, and because of his close and daily contact with medications of every type, the pharmacist is ideally suited to administer these drugs in safe and adequate quantities to patients, under proper medical supervision and subject to the direction of the physician in charge.

In addition to oral administration of drugs, the pharmacist with a minimum of direction or training can administer drugs by the rectal or parenteral method. Thus, he can utilize his background and education in pharmacology, anatomy, and physiology to ease the burdens of other members of the health team.

Suggested Reading

1. *Dosage-Posology Handbook, Usual Doses for Infants and Children.* American Pharmaceutical Association, 1965.
2. *Pharmacological Principles of Medical Practice.* 5th Edition. John C. Krantz, Jr. and C. Jellef Carr; Williams and Wilkens, Baltimore.
3. *Therapeutic Guide for Pharmaceuticals in the Packaged Disaster Hospital.* PHSP No. 1071–C–1, U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1965.

3. Assistance in Sorting Casualties

With the influx of casualties as the result of a disaster comes the responsibility of sorting patients into categories for priority of treatment. In a disaster situation, treatment must be planned so that the largest number of people can be returned to productive activity as soon as possible. Rapid diagnosis and prognosis are required to place patients in one of the following treatment categories:

1. *Ambulatory*—minimal treatment for such conditions as small lacerations, simple fractures, etc., after which the patient can return to work.
2. *Immediate*—lifesaving treatment which can be performed relatively quickly.
3. *Delayed*—treatment for those patients whose lives will not be jeopardized by delay.
4. *Expectant*—treatment which requires such an expenditure of time and supplies that the lives of several people in other priority groups would be jeopardized.

The pharmacist, as a member of the health team, can assist the sorting officer. This requires predisaster training by a physician.

4. Prevention, Detection, and Control of Communicable Diseases

The spread of disease following a disaster is a great threat and can cause more loss of life than the disaster itself. Disaster-caused problems such as contaminated water supplies, disrupted waste disposal systems, rapid increase of insects and rodents, lack of shelter, and scarcity of milk and food contribute to the danger of epidemics.

The pharmacist is qualified to assist in mass immunization programs for smallpox, typhoid and paratyphoid fevers, poliomyelitis, pertusis, diphtheria, and tetanus, all of which can be a peril postdisaster. The pharmacist can also do a great deal to inform the general public of the need for immunization as a part of predisaster preparedness. Should a disaster occur, he can offer assistance in the emergency quarantine of segments of the public not previously immunized, the detection of symptoms of communicable diseases, the administration of medications in the proper dosage for various age groups, etc.

Vector control, food and drug inspection and analysis, control and disposal of sewage and garbage under disaster conditions are all areas where pharmacists can offer assistance. Public health courses are given in colleges of pharmacy and the pharmacist has a working knowledge of public health protection and organization methods. To augment his formal education in these areas, the pharmacist can receive helpful advice, information, and consultation from local and State health departments in order to be better prepared to function in an emergency.

Suggested Reading

1. *Communicable and Infectious Diseases.* 5th Edition. Franklin H. Top; Crosby, St. Louis, Mo., 1964.
2. *Control of Communicable Diseases in Man.* 10th Edition. John E. Gordon, Editor; American Public Health Association, New York, N.Y., 1965.

C. RELATED SERVICES

The pharmacist may be called on to perform supply, laboratory, and X-ray services. Some, through their previous experience, will be prepared to function at once, while others will require some training. These services are important in an emergency hospital program in order to give comprehensive disaster medical care. They provide the physician with a complete system of diagnosis and patient care.

The Packaged Disaster Hospital includes all these facilities. Because there will be a great need for manpower to staff these units, the pharmacist will find this an appropriate place to offer his services.

Pharmacists interested in learning more about these services can train themselves through college courses designed to cover these specific areas. In Canada, for example, pharmacists are given a course in laboratory techniques so that they can assist in rendering emergency laboratory services.

1. Supply Activities

For rapid, effective patient care in an emergency, adequate supplies and equipment must be readily available whenever they are needed by physicians, nurses, and other health personnel. In Packaged Disaster Hospital operations, the cleaning, processing, and assembling of sterile supplies, plus the distribution of these and general supplies, can be centralized for best utilization of available personnel.

Hospital pharmacists often handle general supply activities and this is a function which most pharmacists could easily perform in a PDH. Most pharmacists could also master the fundamentals of central sterile supply service with some guidance and direction.

Suggested Reading

1. *Central Sterile Supply Section of the Packaged Disaster Hospital.* PHSP No. 1071–F–3. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1966.
2. *Pharmacy Section of the Packaged Disaster Hospital.* PHSP No. 1071–F–13. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization. (Available 1966.)

2. Laboratory Services

Laboratory services are necessary in the overall operation to provide complete medical services for adequate diagnosis of patient illness. The pharmacist, having been educated in bacteriology and laboratory procedures, can be utilized for the emergency manufacture of culture media, diagnostic agents, stains, and allied items required for operation of an emergency laboratory.

Clinical laboratory procedures in serology, blood chemistry, urinalysis, haematology, and basic bacteriology are also functions readily assimilated by most pharmacists. Some pharmacists may have had adequate training in these areas because of military or hospital training. Others will be needed. Pharmacists should be prepared to assist the pathologist and the medical technologist in providing emergency laboratory services.

Suggested Reading

Laboratory Section of the Civil Defense Emergency Hospital. PHSP No. 1071–F–4. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964.

3. X-ray Services

Equally important to the successful administration of emergency medical services are adequate X-ray facilities. Pharmacists can be utilized to perform emergency X-ray services. All pharmacists should be familiar with the anatomy of the body and many will have had enough prior experience to be prepared to function with a minimum of further training. The Packaged Disaster Hospital contains an X-ray section which is a complete unit for rendering emergency X-ray service.

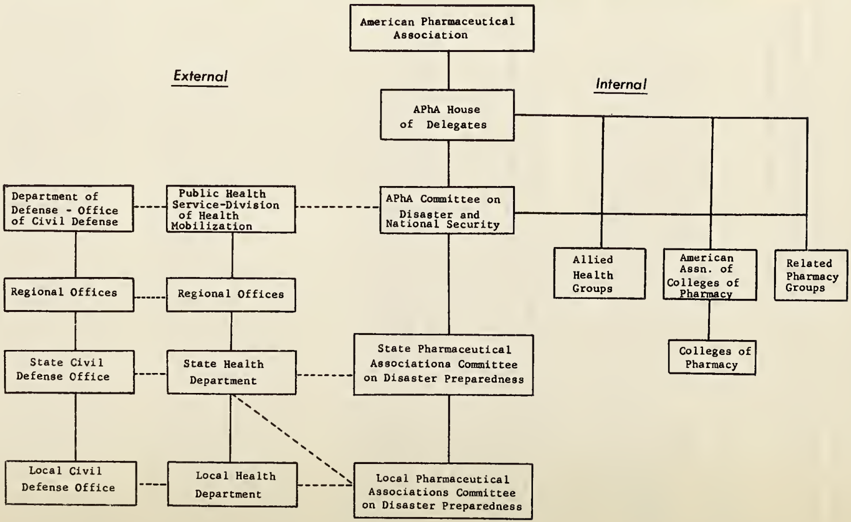
In addition to assisting the X-ray technician, the pharmacist could also prepare solutions and other material which may be required, since specific medications and solutions are often necessary for X-ray services.

Suggested Reading

X-Ray Section of the Civil Defense Emergency Hospital. PHSP No. 1071–F–2. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Health Mobilization, 1964.

Figure 4

ORGANIZATIONAL CHART FOR PHARMACIST'S ROLE IN DISASTER PERPAREDNESS


American Pharmaceutical Association
External
Internal
APhA House of Delegates
Department of Defense - Office of Civil Defense
Public Health Service-Division of Health Mobilization
APhA Committee on Disaster and National Security
Allied Health Groups
American Assn. of Colleges of Pharmacy
Related Pharmacy Groups
Regional Offices
Regional Offices
Colleges of Pharmacy
State Civil Defense Office
State Health Department
State Pharmaceutical Associationa Committee on Disaster Preparedness
Local Civil Defense Office
Local Health Department
Local Pharmaceutical Associations Committee on Disaster Preparedness

ORGANIZATIONAL PROGRAMS AND ACTIVITIES

The success of any program designed to accomplish disaster preparedness is in proportion to the degree of organization developed. The well-informed pharmacist can easily fit into an organizational pattern.

While many programs concerning the pharmacist have been developed and require his participation, there still remain numerous areas in which the pharmacist can exercise ingenuity to lend his support to the broad area of disaster preparedness. The two groups who carry the weight of the responsibility for emergency medical care are governmental agencies and private professional associations. Programs developed and administered by the Government require aid and assistance from professional groups in order to meet manpower requirements and to develop supporting programs.

The pharmacist should be concerned with providing the best service that he can wherever it is needed. In an organizational sense, programs that do not concern him directly in his daily practice may be considered external, while those which are close to his professional life can be classed as internal. The success of a program of disaster preparedness depends upon everyone involved having a general knowledge of all programs so that many people representing various groups can work together smoothly.

Programs and activities developed and administered by the Government and allied health associations may be regarded as external, while those of the pharmacy associations and colleges may be designated as internal. Figure 4 is an organizational chart illustrating the relationship of these groups to the activities of pharmacy.

Pharmacists can be approached and organized for disaster preparedness activities both by colleges of pharmacy which can begin by orienting their students and by State and local pharmacy associations which will have contact with the pharmacist during his professional career. Properly trained, the pharmacists will be in a position to cooperate with the efforts of local, State, and Federal programs. They can also undertake the responsibility of working with the other health professions.

Under emergency conditions, the health professions will work as a team with each member being given definite responsibilites and specific directions so that the collective effort will be as successful as possible. The importance of liaison between the health professions as well as Government agencies cannot be stressed enough. An organized and successful response to the problems caused by a disaster, as stated previously, depends on predisaster preparedness.

A. GOVERNMENT

The administration and coordination of disaster programs on the national level are responsibilities of the Office of Civil Defense, Department of Defense, and the Division of Health Mobilization of the Public Health Service, Department of Health, Education, and Welfare.

The Office of Civil Defense is concerned primarily with providing the public adequate protection in the event of an enemy attack. Its organizational efforts to secure shelters and protect the public are coordinated with State and local civil defense departments.

The Division of Health Mobilization is concerned with preparing a program that will assure availability of adequate health services for the civilian population in the event of an emergency by:

1. Preparing the civilian to meet his own health needs when deprived of the services of a physician.
2. Assisting States and local communities to develop the capability to implement their emergency health operations plans effectively.
3. Developing a coordinated emergency program for Federal agencies with health or health-related responsibilities.

The Division of Health Mobilization has a Regional Representative and a Training Officer in each of the nine Regional Offices of the Department of Health, Education, and Welfare and State Representatives assigned to the State Health Departments. These representatives coordinate health mobilization activities throughout the country and provide liaison between State and Federal programs. Many States have extremely active and well directed disaster preparedness programs.

Programs designed to provide pharmaceutical services should be developed in close connection with local and State agencies since it is their responsibility to ensure adequate disaster preparedness.

B. PROFESSIONAL ASSOCIATIONS

Medicine, dentistry, nursing, veterinary medicine, and other health professions have been and continue to be extremely active in their efforts to bring disaster preparedness to the attention of their members.

Programs developed by these professions have served to supplement existing local, State, and Federal programs. Members of the professions take an active part in disaster preparedness programs and are aware of the need for a knowledgeable approach to these programs. Through committee activity on the local, State, and national levels, necessary manpower is readily available to meet emergency situations.

In addition to association activities, the health professions are expanding their educational programs in this area. The medical schools, through

Figure 5

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE REGIONAL OFFICES

Region	*States*	*Regional Office*
I	Maine, Vermont, New Hampshire, Connecticut, Rhode Island, Massachusetts.	120 Boylston Street, Boston, Mass., 02116.
II	New York, Pennsylvania, New Jersey, Delaware.	42 Broadway, New York, N.Y., 10004.
III	Maryland, District of Columbia, Virginia, West Virginia, Kentucky, North Carolina, Puerto Rico, Virgin Islands.	700 East Jefferson Street, Charlottesville, Va., 22901.
IV	Tennessee, South Carolina, Mississippi, Alabama, Georgia, Florida.	50 Seventh Street, NE., Atlanta, Ga., 30323.
V	Wisconsin, Michigan, Illinois, Indiana, Ohio.	433 West Van Buren Street, Chicago, Ill., 60607.
VI	North Dakota, Minnesota, South Dakota, Nebraska, Iowa, Kansas, Missouri.	560 Westport Road, Kansas City, Mo. 64111.
VII	New Mexico. Oklahoma, Arkansas, Texas, Louisiana.	1114 Commerce Street, Dallas, Tex., 75202.
VIII	Montana, Idaho, Wyoming, Utah, Colorado.	19th and Stout Streets, Denver, Colo., 80202.
IX	Washington, Oregon, California, Nevada, Arizona, Alaska, Hawaii.	50 Fulton Street, San Francisco, Calif., 94102.

the Medical Education for National Defense (MEND) program, have, since 1952, trained and motivated medical students in military and disaster medicine. Schools of nursing, dentistry, and veterinary medicine are studying methods for including disaster preparedness content in their basic professional curricula.

C. PHARMACEUTICAL ASSOCIATIONS

The Federal Government, many States, and many of the health professions have developed programs which make it possible for members of the health professions to participate in an organized effort to provide the most effective program of disaster preparedness. The pharmacy profession must assume the responsibility for organizing the activities of pharmacists.

Many local and State pharmaceutical associations have undertaken excellent programs in disaster preparedness and as a result have been able to contribute to disaster preparedness activities. Some colleges of pharmacy have included programs of disaster preparedness in their curricula.

The American Pharmaceutical Association has recommended that the health professions combine their efforts in coordinating programs of disaster preparedness, possibly by the formation of a Joint Council of Health Professions for Disaster Preparedness Planning. Such an organization would include all the health professions (medicine, dentistry, veterinary medicine, nursing, and pharmacy), hospital administrators, and Government representatives concerned with emergency health care and civil defense. Such joint councils at national, State, and local levels would permit close liaison and planning for disaster preparedness.

Local, State, and national pharmaceutical associations working at their respective levels will have the responsibility of organizing the activities of pharmacists and assuring that they are competently trained and educated in various aspects of civil defense and emergency health measures. The organizational effort must be one in which there is a system of graded controls from the local to the State level and from the State to the national level.

The Committee on Disaster and National Security of the American Pharmaceutical Association has been encouraging participation of pharmacists in disaster programs on all levels, yet it recognizes that the key to any successful organizational effort is dependent upon the support of the pharmacist at the local level. Circumstances will vary from one locale to another and from one State to another. To be fully effective, a system will probably depend on coordination by the State associations.

Many State pharmaceutical associations have active committees on disaster planning which administer excellent programs. By delegating responsibilities to the local groups, the State association maintains an adequate control system while the local groups can develop programs appropriate to their particular environment.

The State associations have an important role to perform in disaster preparedness. The number and types of programs vary from State to State according to existing conditions. Some State associations have compiled listings of all sources of medical supplies which could be turned to in the event of disaster. Others have coordinated pharmacists' activities at the local level so that there is liaison between local professional groups in every area of the State. Such programs should be encouraged and enlarged so that pharmacists can be educated and trained to perform expanded functions when the need occurs.

With adequate liaison between the APhA Committee on Disaster and National Security and the State associations, pharmacists can be encouraged to participate in active programs for disaster preparedness at all levels. Liaison must also exist between State and local associations for it is at the local level that pharmacists can make their greatest contribution. Those in the immediate locality of the disaster are the ones who must provide the first emergency services and it is at this time that the value of predisaster planning at the local level becomes apparent. How rapidly help can be obtained from farther away depends on the extent of local and State liaison. Local pharmacists' contact with their State associations is important in facilitating an orderly reaction to disaster needs.

The previously mentioned Summit Plan and Medikit, developed by the Summit County Pharmaceutical Association, is one of many programs organized by pharmacists on a local level to ensure that their services will be available to the public during a disaster.

D. COLLEGES OF PHARMACY

While the pharmaceutical associations will assume their responsibilities in organizing the activities of pharmacists and, to some extent, in training them, the colleges of pharmacy are in the best position to orient pharmacy students to their actual role in disaster as a part of a professional health team.

Some colleges of pharmacy have conducted courses in civil defense activities for their students to familiarize them with the functions they can perform in a disaster. A program in pharmacy colleges similar to the previously mentioned Medical Education for National Defense (MEND) program for medical students would be advisable.

Among subjects which could be offered in conjunction with public health or other courses are the following:

1. Existing government or professional programs
2. The pharmacist's responsibility in disaster preparedness
3. Medical Self-Help
4. Emergency first aid
5. Laboratory procedures
6. Public health procedures as they relate to communicable diseases, sanitation and vector control

Colleges of pharmacy can also reach practicing pharmacists through advanced courses. Introductory classes could be arranged for those pharmacists who have had no training in disaster preparedness and more specialized courses could be offered to those who wish to continue their education in disaster planning activities.

Such an approach will prepare all pharmacists to work with local, State, and national committees so that they can offer their services in disaster preparedness planning in the most effective way.

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C—Medical Care and Treatment

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E—Health Resources Evaluation

F—Packaged Disaster Hospitals

G—Health Facilities

H—Supplies and Equipment

I—Health Manpower

J—Public Water Supply

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